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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/728,193	11/30/2000	Etsuo Morita	09792909-4714	4426
26263 7590 01/11/2007 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, SEARS TOWER CHICAGO, IL 60606-1080			EXAMINER SONG, MATTHEW J	
			ART UNIT 1722	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/11/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/728,193

Applicant(s)

MORITA, ETSUO

Examiner

Matthew J. Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6,8-20,23-25,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-6 and 11-20 is/are allowed.
- 6) ☒ Claim(s) 8-10 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/19/2006 has been entered.

Withdrawn Rejections

2. Applicant's arguments, see page 12-13 of the remarks, filed 10/19/2006, with respect to 35 USC 102 rejection in view of Hayashi have been fully considered and are persuasive. The rejection of claims 1, 2, 11-16, 18, 23, 24, 25, and 28 has been withdrawn. Referring to claim 1, Hayashi et al does not teach or suggest depositing an intermediate layer directly on a surface of the first pattern and forming a second III-V nitride pattern directly on the surface of the intermediate layer. Referring to claim 23, Hayashi et al does not teach or suggest the light emitting portion overlies a region of the crystal where the second pattern overlies the first pattern because Hayashi et al teaches the second pattern forms the light emitting portion, thus light emitting portion does not overlie the second pattern.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 25 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 25 recites, “ wherein the crystal is substantially free of an active layer between the first pattern and a second pattern” in lines 19-20. This is a negative limitation and any negative limitation or exclusionary proviso must have basis in the original disclosure (MPEP 2173.05(i). The mere absence of a positive recitation is not a basis for a negative limitation. (MPEP 2173.05(i). The original specification does not provide support for the exclusion of an active layer between the first and second pattern.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8-10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadatomoto et al (US 6,225,650).

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Tadatomo et al teaches a first pattern 2 includes a plurality of first pattern elements in a first position in the crystal in the direction of the thickness of the crystal, the first pattern elements being distributed in a lateral direction with respect to the crystal and in a longitudinal direction with respect to the crystal that is substantially orthogonal to the lateral direction so that a space separates each set of adjacent first pattern elements in the lateral and orthogonal direction (Fig 2, 4 and 6). Tadamoto et al also teaches forming a second pattern 21 in a second position in the crystal in the direction of the thickness of the crystal including a plurality of longitudinal pattern elements extending in the longitudinal direction and a plurality of lateral pattern elements extending in the lateral direction to intersect the longitudinal pattern elements, the intersecting elements forming a plurality of spaces between them that are aligned in the lateral and longitudinal direction (Fig 2, 4, and 6; col 17, ln 1-40).

Tadatomo et al also teaches the pattern of the masked region and non-masked region may form a zig-zag line, optional curves, such as a sine curve or a repeat pattern in which the ratio of A to B varies according to a certain relational formula may be used, where B is the width of the masked region and A is the width of the non-masked region (col 5, ln 45-67; col 6, ln 1-15; Fig 5-6). This varying of the A to B ratio clearly suggests applicant's pitch of the first pattern and the second pattern are different because the pitch of the pattern is dependant on the value of A and B, which can be changed and varied, even within the pattern, which would be expected to cause the partial overlap in Fig 4.

Tadatomo et al does not the lateral pitch and the longitudinal pitch are substantially the same for the first and second pattern, however Tadatomo et al does teach the A and B ratio may be changed; therefore it would have been obvious to a person of ordinary skill in the art at the

time of the invention to modify Tadatomo et al by changing the shape of the pattern. Changes in shape are held to be *prima facie* obvious, absent evidence of unexpected results.

Referring to claims 9-10, Tadatomo et al teaches a rectangular, zigzag line, curves, or hexagon masked region (col 6, ln 1-10 and Fig 2), which clearly suggests the use of different shapes. Tadatomo et al does not teach a rhombus with no right angles. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Tadatomo et al by having a pattern of rhombus with no right angles because changes in shape are held to be *prima facie* obvious (MPEP 2144.04).

Referring to claim 25, Tadatomo et al does not teach an intervening active layer (Fig 4).

7. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tadatomo et al (US 6,225,650) as applied to claims 8-10 and 25 above, and further in view of Hayashi et al (US 6,319,742).

Tadatomo et al teaches all of the limitations of claim 23, as discussed previously, except forming a device film having a light emitting portion including a cladding layer having a protrusion, a contact layer formed on the cladding layer only above the protrusion and an electrode formed on the contact layer. Tadatomo et al also teaches the GaN substrate can be used to form a light emitting device thereon (col 8, ln 25-67).

In a method of forming a light emitting device, note entire reference, Hayashi et al teaches a p-AlGaIn cladding layer 32 having a protrusion, a p-GaN contact layer 33 formed above the protrusion and a p-electrode 34 formed on the p-GaN contact layer 33 (col 13, ln 45 to col 14, ln 15 and Fig 13). It would have been obvious to a person of ordinary skill in the art at the

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time of the invention to modify Tadatomo et al GaN substrate having a low dislocation density by forming a semiconductor laser device, as taught by Hayashi et al, to form a useful laser device.

Allowable Subject Matter

8. Claims 1-2, 4-6 and 11-20 are allowed.

9. Claims 27-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

10. The following is an examiner's statement of reasons for allowance: The closest prior art is Tadatomo et al (US 6,225,650). Tadatomo et al teaches forming patterns of a mask material and forming GaN thereon (Fig 4 and col 5, ln 1-65). Tadatomo et al also teaches a second mask material and a second GaN layer formed on the first layer, wherein the second GaN is formed without dislocation (col 5, ln 1-65). Tadatomo et al does not teach or suggest a III-V pattern of material, wherein the pitch of the first pattern of material is different from the pitch of the second pattern of material.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

11. Applicant's arguments with respect to claims 8-10 and 23-25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

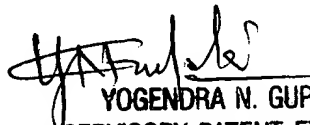
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J Song
Examiner
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MJS
January 8, 2007